

24975\_Amended\_Sequence\_Final.txt  
SEQUENCE LISTING

<110> Institute of Immunology, PLA  
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Wu, Yuzhang  
Bian, Jiang  
Zhou, Wei  
Jia, Zhengcai  
Shi, Tongdong  
Zou, Liyun

<120> Immunogen for Preparation of Therapeutic Vaccines or Drugs for  
Treatment of Hepatitis B and the Producing Method and Use Thereof

<130> CCPT-1-24975

<140> 10/528,350  
<141> 2006-02-15

<150> PCT/CN03/00792  
<151> 2003-09-18

<150> CN 02130738.5  
<151> 2002-09-18

<160> 74

<170> PatentIn version 3.5

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<220>  
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CH3(CH2)14CO

<220>  
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<223> Xaa can be any naturally occurring amino acid

<400> 1

Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Ala Ala Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Gly Gly  
20 25 30

Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
35 40

<210> 2

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 (CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO  
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 <223> Xaa can be any naturally occurring amino acid  
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Xaa Ser Ser Pro Ala Arg Glu Gly Gly Gly Trp Leu Ser Leu Leu Val  
 1 5 10 15

Pro Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro  
 20 25 30

Ala

<210> 3  
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Glu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
 20 25 30

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      CH3(CH2)14CO

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<223> Xaa can be any naturally occurring amino acid

<400> 4
Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr
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Glu Ala Ala Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Gly Gly
      20          25          30

Gly Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr
      35          40

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      CH3(CH2)14CO

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<223> Xaa can be any naturally occurring amino acid

<400> 5
Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr
1          5          10          15

Glu Ala Ala Ala Ser Ile Val Ser Pro Phe Ile Pro Leu Leu Gly Gly
      20          25          30

Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
      35          40

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 <223> Th cell epitope from tetanus toxoid or variant species thereof  
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Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu  
 1 5 10

<210> 7  
 <211> 5  
 <212> PRT  
 <213> Unknown

<220>  
 <223> Th cell epitope from tetanus toxoid or variant species thereof  
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Pro Ala Asp Arg Glu  
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<210> 8  
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<400> 8

Pro Leu Gly Phe Phe Pro Asp His  
 1 5

<210> 9  
 <211> 15  
 <212> PRT  
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<400> 9

Met Gln Trp Asn Ser Thr Ala Leu His Gln Ala Leu Gln Asp Pro  
 1 5 10 15

<210> 10  
 <211> 10  
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<400> 10

Ser Ile Leu Ser Lys Thr Gly Asp Pro Val  
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<210> 11

<211> 9  
 <212> PRT  
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Val Leu Gln Ala Gly Phe Phe Leu Leu  
 1 5

<210> 12  
 <211> 9  
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<400> 12

Phe Leu Leu Thr Arg Ile Leu Thr Ile  
 1 5

<210> 13  
 <211> 9  
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<400> 13

Phe Leu Gly Gly Thr Pro Val Cys Leu  
 1 5

<210> 14  
 <211> 9  
 <212> PRT  
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Leu Leu Cys Leu Ile Phe Leu Leu Val  
 1 5

<210> 15  
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Leu Leu Asp Tyr Gln Gly Met Leu Pro Val  
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<210> 16  
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<400> 16

Trp Leu Ser Leu Leu Val Pro Phe Val  
 1 5

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<400> 17

Gly Leu Tyr Ser Ser Thr Val Pro Val  
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<210> 18  
 <211> 10  
 <212> PRT  
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<400> 18

Lys Val Leu His Lys Arg Thr Leu Gly Leu  
 1 5 10

<210> 19  
 <211> 9  
 <212> PRT  
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<400> 19

Val Leu His Lys Arg Thr Leu Gly Leu  
 1 5

<210> 20  
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 <212> PRT  
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<400> 20

Gly Leu Ser Ala Met Ser Thr Thr Asp Leu  
 1 5 10

<210> 21  
 <211> 9  
 <212> PRT  
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<400> 21

Cys Leu Phe Lys Asp Trp Glu Glu Leu  
 1 5

<210> 22  
 <211> 10  
 <212> PRT  
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<400> 22

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Val Leu Gly Gly Cys Arg His Lys Leu Val  
1 5 10

<210> 23  
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<400> 23

Phe Leu Pro Ser Asp Phe Phe Pro Ser Val  
1 5 10

<210> 24  
<211> 11  
<212> PRT  
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<400> 24

Ser Thr Leu Pro Glu Thr Thr Val Val Arg Arg  
1 5 10

<210> 25  
<211> 9  
<212> PRT  
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<400> 25

Glu Tyr Leu Val Ser Phe Gly Val Trp  
1 5

<210> 26  
<211> 9  
<212> PRT  
<213> Hepatitis B virus

<400> 26

Gly Leu Tyr Ser Ser Thr Val Pro Val  
1 5

<210> 27  
<211> 9  
<212> PRT  
<213> Hepatitis B virus

<400> 27

Gly Leu Ser Arg Tyr Val Ala Arg Leu  
1 5

<210> 28  
<211> 9  
<212> PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 28

Phe Leu Leu Ser Leu Gly Ile His Leu  
1 5

&lt;210&gt; 29

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 29

Ile Leu Arg Gly Thr Ser Phe Val Tyr Val  
1 5 10

&lt;210&gt; 30

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 30

Ser Leu Tyr Ala Asp Ser Pro Ser Val  
1 5

&lt;210&gt; 31

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 31

Lys Tyr Thr Ser Phe Pro Trp Leu Leu  
1 5

&lt;210&gt; 32

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 32

Ser Leu Tyr Ala Asp Ser Pro Ser Val  
1 5

&lt;210&gt; 33

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 33

Ala Leu Met Pro Leu Tyr Ala Cys Ile  
1 5



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<400> 34

Tyr Met Asp Asp Val Val Leu Gly Ala  
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<210> 35  
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<400> 35

Trp Ile Leu Arg Gly Thr Ser Phe Val  
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<210> 36  
 <211> 9  
 <212> PRT  
 <213> Hepatitis B virus

<400> 36

Lys Leu His Leu Tyr Ser His Pro Ile  
 1 5

<210> 37  
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<400> 37

Phe Thr Gln Ala Gly Tyr Pro Ala Leu  
 1 5

<210> 38  
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<400> 38

Ser Leu Asn Phe Leu Gly Gly Thr Thr Val  
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<210> 39  
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 <212> PRT  
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<400> 39

Leu Leu Asp Tyr Gln Gly Met Leu Pro Val

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1                5                10
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Leu Leu Val Pro Phe Val Gln Trp Phe Val
1                5                10
<210> 41
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Gly Leu Ser Pro Thr Val Trp Leu Ser Val
1                5                10
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<400> 42
Leu Leu Pro Ile Phe Phe Cys Leu Trp Val
1                5                10
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<211> 7
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<400> 43
Tyr Val Asn Thr Asn Met Gly
1                5
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Tyr Val Asn Thr Asn Met Gly Leu Lys Ser Glu Gln
1                5                10
<210> 45
<211> 10
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&lt;400&gt; 45

Ser Ile Leu Ser Lys Thr Gly Asp Pro Val  
 1 5 10

&lt;210&gt; 46

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 46

Gly Leu Ser Pro Thr Val Trp Leu Ser Val  
 1 5 10

&lt;210&gt; 47

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 47

Ser Ile Val Ser Pro Phe Ile Pro Leu Leu  
 1 5 10

&lt;210&gt; 48

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 48

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
 1 5 10

&lt;210&gt; 49

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 49

Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr  
 1 5 10

&lt;210&gt; 50

&lt;211&gt; 35

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Immunogen

&lt;220&gt;

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<223> Xaa is Lys with the following N-terminal modification:  
 CH3(CH2)10CO

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<223> Xaa can be any naturally occurring amino acid

<400> 50
Xaa Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Ser Leu Asn Phe Leu
1          5          10          15

Gly Gly Thr Thr Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu Tyr
          20          25          30

Phe Pro Ala
          35

<210> 51
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      CH3(CH2)14CO

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<223> Xaa can be any naturally occurring amino acid

<400> 51
Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr
1          5          10          15

Glu Ala Ala Ala Leu Leu Cys Leu Ile Phe Leu Leu Val Gly Gly Gly
          20          25          30

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
          35          40

<210> 52
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 <223> Xaa can be any naturally occurring amino acid

<400> 52

Xaa Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Leu Leu Asp Tyr Gln  
 1 5 10 15

Gly Met Leu Pro Val Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr  
 20 25 30

Phe Pro Ala  
 35

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 <223> Xaa can be any naturally occurring amino acid

<400> 53

Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
 1 5 10 15

Glu Gly Gly Gly  
 20

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<223> Xaa is Phe with the following N-terminal modification:  
CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO

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 <222> (1)..(1)  
 <223> Xaa can be any naturally occurring amino acid

<400> 54

Xaa Leu Pro Ser Asp Phe Phe Pro Ser Val Ala Ala Ala Asp Pro Arg  
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Val Arg Gly Leu Tyr Phe Pro Ala  
 20

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CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO

<220>  
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 <223> Xaa can be any naturally occurring amino acid

<400> 55

Xaa Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Trp Leu Ser Leu Leu  
 1 5 10 15

Val Pro Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu Tyr Phe  
 20 25 30

Pro Ala

<210> 56  
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CH3(CH2)14CO

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<221> misc\_feature

<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 56

Xaa Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Phe Leu Pro Ser Asp  
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Phe Phe Pro Ser Val Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr  
20 25 30

Phe Pro Ala  
35

<210> 57

<211> 35

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<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 57

Xaa Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Leu Leu Val Pro Phe  
1 5 10 15

Val Gln Trp Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu Tyr  
20 25 30

Phe Pro Ala  
35

<210> 58

<211> 35

<212> PRT

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 <222> (1)..(1)  
 <223> Xaa can be any naturally occurring amino acid  
 <400> 58

Xaa Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Gly Leu Ser Pro Thr  
 1 5 10 15

Val Trp Leu Ser Val Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr  
 20 25 30

Phe Pro Ala  
 35

<210> 59  
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 CH3(CH2)16CO

<220>  
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 <400> 59

Xaa Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Leu Leu Pro Ile Phe  
 1 5 10 15

Phe Cys Leu Trp Val Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr  
 20 25 30

Phe Pro Ala  
 35

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<223> Immunogen

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CH<sub>3</sub>(CH<sub>2</sub>)<sub>16</sub>CO

<220>

<221> misc\_feature

<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

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Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Ala Ala Ala Tyr Val Asn Thr Asn Met Gly Gly Gly Gly Asp Pro  
20 25 30

Arg Val Arg Gly Leu Tyr Phe Pro Ala  
35 40

<210> 61

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<223> Xaa is Lys with the following N-terminal modification:  
CH<sub>3</sub>(CH<sub>2</sub>)<sub>14</sub>CO

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<221> misc\_feature

<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 61

Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Gly Gly Gly Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Ser Ser  
20 25 30

Ser Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
35 40

<210> 62

<211> 43

<212> PRT

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<221> misc\_feature

<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 62

Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Ala Ala Ala Tyr Val Asn Thr Asn Met Gly Leu Lys Gly Gly Gly  
20 25 30

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
35 40

<210> 63

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CH3(CH2)14CO

<220>

<221> misc\_feature

<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 63

Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Ala Ala Ala Pro Leu Gly Phe Phe Pro Asp His Gly Gly Gly Asp  
20 25 30

Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
35 40

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 CH<sub>3</sub>(CH<sub>2</sub>)<sub>14</sub>CO

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> Xaa can be any naturally occurring amino acid

<400> 64

Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
 1 5 10 15

Glu Ala Ala Ala Met Gln Trp Asn Ser Thr Ala Leu His Gln Ala Leu  
 20 25 30

Gln Asp Pro Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro  
 35 40 45

Ala

<210> 65  
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 CH<sub>3</sub>(CH<sub>2</sub>)<sub>14</sub>CO

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> Xaa can be any naturally occurring amino acid

<400> 65

Xaa Ser Ser Pro Asp Ala Arg Glu Ala Ala Ala Ser Ile Leu Ser Lys  
 1 5 10 15

Thr Gly Asp Pro Val Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr

Phe Pro Ala  
35

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<220>  
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CH3(CH2)16CO

<220>  
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<222> (1)..(1)  
<223> Xaa can be any naturally occurring amino acid

<400> 66

Xaa Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Val Leu Gln Ala Gly  
1 5 10 15

Phe Phe Leu Leu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe  
20 25 30

Pro Ala

<210> 67  
<211> 34  
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<213> Artificial Sequence

<220>  
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<220>  
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CH3(CH2)16CO

<220>  
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<222> (1)..(1)  
<223> Xaa can be any naturally occurring amino acid

<400> 67

Xaa Ser Ser Pro Ala Asp Arg Glu Ser Ser Ser Phe Leu Leu Thr Arg  
1 5 10 15

24975\_Amended\_Sequence\_Final.txt

Ile Leu Thr Ile Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe  
20 25 30

Pro Ala

<210> 68  
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CH3(CH2)16CO

<220>  
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<222> (1)..(1)  
<223> Xaa can be any naturally occurring amino acid

<400> 68

Xaa Ser Ser Pro Ala Asp Arg Glu Ala Ala Phe Leu Gly Gly Thr  
1 5 10 15

Pro Val Cys Leu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe  
20 25 30

Pro Ala

<210> 69  
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<220>  
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<223> Xaa is Lys with the following N-terminal modification:  
CH3(CH2)14CO

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> Xaa can be any naturally occurring amino acid

<400> 69

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Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Ala Ala Ala Gly Leu Ser Pro Thr Val Trp Leu Ser Val Gly Gly  
20 25 30

Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
35 40

<210> 70  
<211> 36  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Immunogen

<220>  
<221> MISC\_FEATURE  
<223> Xaa is Lys with the following N-terminal modification:  
CH3(CH2)16CO

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> Xaa can be any naturally occurring amino acid

<400> 70

Xaa Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Ser Thr Leu Pro Glu  
1 5 10 15

Thr Thr Val Val Arg Arg Gly Gly Gly Asp Pro Arg Val Arg Gly Leu  
20 25 30

Tyr Phe Pro Ala  
35

<210> 71  
<211> 41  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Immunogen

<220>  
<221> MISC\_FEATURE  
<223> Xaa is Lys with the following N-terminal modification:  
CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO

<220>  
<221> misc\_feature  
<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 71

Xaa Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Trp Leu Ser Leu Leu  
1 5 10 15

Val Pro Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu Tyr Phe  
20 25 30

Pro Ala Arg Gly Leu Tyr Phe Pro Ala  
35 40

<210> 72

<211> 48

<212> PRT

<213> Artificial Sequence

<220>

<223> Immunogen

<220>

<221> MISC\_FEATURE

<223> Xaa is Lys with the following N-terminal modification:  
CH3(CH2)14CO

<220>

<221> misc\_feature

<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 72

Xaa Ser Ser Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu  
1 5 10 15

Ala Ala Ala Met Gln Trp Asn Ser Thr Ala Leu His Gln Ala Leu Gln  
20 25 30

Asp Pro Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala  
35 40 45

<210> 73

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Immunogen

<220>

<221> MISC\_FEATURE

<223> Xaa is Lys with the following N-terminal modification:  
CH3(CH2)7CH=CH(CH2)CO, CH3CH2CH=CHCH2CH=CH(CH2)7CO7

24975\_Amended\_Sequence\_Final.txt

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<220>
<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 73
Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr
1          5          10
Glu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr
          20          25

<210> 74
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Immunogen

<220>
<221> MISC_FEATURE
<223> Xaa is Lys with the following N-terminal modification:
      CH3(CH2)16CO

<220>
<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 74
Xaa Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr
1          5          10
Glu Ala Ala Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Gly Gly
          20          25          30
Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
          35          40

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